UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,964	02/04/2004	Claudia Mattern	85946.8276	5308

22242 7590 04/04/2007
FITCH EVEN TABIN AND FLANNERY
120 SOUTH LA SALLE STREET
SUITE 1600
CHICAGO, IL 60603-3406

EXAMINER	
SASAN, ARADHANA	
ART UNIT	PAPER NUMBER
1609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/772,964	MATTERN, CLAUDIA	
	Examiner	Art Unit	
	Aradhana Sasan	1609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/07/2004 & 04/18/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

1. Amendments to claims (5, 6, 8, 9, and 12-14) filed 02/04/2004 are acknowledged.

2. Claims 1-14 are being presented for examination.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119 (a) – (d).

Information Disclosure Statement

4. The information disclosure statements (IDS) submitted on 04/18/2006 and 06/07/2004 were filed. The submissions are in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the examiner is considering the information disclosure statements.

See attached copy of PTO-1449.

Specification

5. The disclosure is objected to because of the following informalities: spelling error on page 8 of the specification, component is misspelled as "Componentn". Appropriate correction is required.

6. The use of the following trademarks has been noted in this application: TWEEN (page 2), SPAN (page 2), LABRAFIL (page 8), and AEROSIL (page 8). They should be written in all capital letters wherever they appear; or alternatively, they should be

denoted with the registered trademark symbol, ®, and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 5, 8, 12, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131

USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 5 recites the broad recitation "between 30% and 98% by weight", and the claim also recites "between 85% and 95% by weight" which is the narrower statement of the range/limitation.

In the present instance, claim 8 recites the broad recitation "from 1 to 20% by weight", and the claim also recites "1 to 5% by weight" which is the narrower statement of the range/limitation.

In the present instance, claim 12 recites the broad recitation "from 0.5 to 10% by weight", and the claim also recites "1 to 3% by weight" which is the narrower statement of the range/limitation.

In the present instance, claim 14 recites the broad recitation "from 0.5 to 6% by weight", and the claim also recites "0.5 to 2% by weight" which is the narrower statement of the range/limitation.

9. Claim 11 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the limitation "viscosity increasing agent". There is insufficient antecedent basis for this limitation in the claim. Claim 11 depends on claim 10, which discloses a "viscosity regulating agent".

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-6, 8, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Illum (US 5,863,554), in view of Ko et al. (Journal of Microencapsulation 1998).

Claims are drawn to a formulation for nasal application comprising a sexual hormone drug (testosterone), a lipophilic carrier (castor oil – a vegetable oil), a compound having surface tension decreasing activity (selected from surfactants), and a viscosity regulating agent (thickener or gelling agent).

Illum teaches a drug delivery system that enhances the uptake of active drug material from the nasal cavity (Col. 1, lines 16-19). The active drugs that can be used in this drug delivery system include sex hormones (Col. 9, line 31). Absorption enhancing materials such as surface active agents are also taught (Col. 5, lines 47-50). A preferred material is ... lysophosphatidylcholine produced from egg or soy lecithin (Col. 5, lines 38-39). Furthermore, "the drug to be administered to a mucosal surface in the ... nose could be administered as a viscous solution" (Col. 5, lines 6-8). The drug delivery system comprises microspheres. An emulsification technique using "purified olive oil" (Col. 6, line 48) and "soybean oil" (Col. 7, line 40) was used in the preparation of these microspheres. The microspheres are "made from materials that are known to swell in

contact with water to form a gel-like layer with good bioadhesive properties" (Col. 3, lines 5-7).

Illum does not specifically teach a drug delivery system comprising testosterone.

Ko et al. teach emulsion formulations of testosterone for nasal delivery (Abstract). The formulation materials include vegetable oil and surfactants (Page 198, Materials). The formulations are prepared by emulsification of the oil phase (containing the lipophilic testosterone and soybean oil) with the aqueous phase (further containing a surfactant) (Page 199, Preparation of formulations).

It would have been obvious to a person skilled in the art at the time the invention was made to combine the drug delivery system for nasal delivery teaching of Illum with the emulsion formulation of testosterone teaching of Ko to arrive at a nasal delivery system for testosterone. The motivation for combining these references is provided by Illum, which includes sex hormones as drugs that could be used in a nasal drug delivery system. For example, Illum teaches that progesterone "when given by the nasal route ... is absorbed effectively with a bioavailability similar to that for an intravenous injection..." (Col. 2, lines 12-13). Furthermore, since testosterone is a sex hormone that is lipophilic, the inclusion of oil to prepare an emulsion for enhancing the bioavailability of the testosterone and as a slow or sustained release agent would be obvious to a person skilled in the art.

Regarding instant claims 8 and 14, which disclose the weight percentage of component (c) and the sexual hormone drug, a person skilled in the art would modify the percentages of the formulation based on the required dosage and desired release profile, and the recited percentages are obvious variants unless there is evidence of criticality or unexpected results.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Illum (US 5,863,554), in view of Ko et al. (Journal of Microencapsulation 1998) as applied to claims 1-6, 8, 13, and 14 above, and further in view of Patel et al. (US 6,248,363).

The teachings of Illum and Ko are stated above. The difference that Illum and Ko do not teach is the oleoyl macrogolglyceride as the surfactant.

Patel et al. teach that the bioavailability of drugs (like simvastatin) (Col 6, line 49) can be improved by their invention, which includes macrogolglycerides as the surfactant (Col 35, line 46, Col 65, lines 50-53, claim 16). Thus, a person skilled in the art would use a variety of macrogolglycerides for surfactants. These macrogolglycerides would include different fatty acid esters and oleoyl macrogolglyceride since it would be more compatible with humans. The motivation to use these surfactants would be to allow the emulsification and improve the bioavailability of poorly soluble, lipophilic drugs.

13. Claims 9-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Illum (US 5,863,554), in view of Ko et al. (Journal of Microencapsulation 1998) as

applied to claims 1-6, 8, 13, and 14 above, and further in view of Dondeti (International Journal of Pharmaceutics 1996).

The teachings of Illum and Ko are stated above. The difference not taught by Illum in view of Ko is the viscosity-regulating agent.

Dondeti teaches formulation parameters that affect nasal absorption of drugs. The use of HPMC (hydroxypropyl methylcellulose) (Page 118), methylcellulose (Page 118), and microcrystalline cellulose (Page 125) is taught.

Regarding instant claim 12, a person skilled in the art would modify the percentages of the formulation (specifically percentage of the viscosity regulating agent) in order to optimize the release profile and the recited percentage is an obvious variant unless there is evidence of criticality or unexpected results.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the teachings of Illum and Ko (as stated above), and further use the viscosity modifying agents such as cellulose derivatives taught by Dondeti to arrive at the claimed invention. The motivation to combine these references is provided by Dondeti, who teaches, "increased viscosity prolongs the retention time of drug in the nasal cavity..."(Page 119).

14. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Illum (US 5,863,554), in view of Ko et al. (Journal of Microencapsulation 1998), and further in view of Glass (US 5,897,894).

The teachings of Illum and Ko are stated above. The difference not taught by Illum in view of Ko is colloidal silicon dioxide as the viscosity-regulating agent.

Glass teaches that "liquid oils can be thickened to increase their viscosity (e.g. with silicon dioxide) (Col. 5, lines 46-48). A person skilled in the art would use colloidal silicon dioxide, which is known in the art as a thickening agent, and would be an obvious choice of materials by the experimenter.

Conclusion

1. No claims are allowed.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aradhana Sasan whose telephone number is (571) 272-9022. The examiner can normally be reached Monday to Thursday from 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang, can be reached at 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VICKIE KIM
PRIMARY EXAMINER
CKD